

There are virtually thousands of reasonable and logical ways for utility companies to use photovoltaics, all of which have an immediate payback—all of which prove that PV can be a less expensive option than conventional service.

Many utility companies are using PV for their isolated, low energy, or low-revenue loads that are costly to operate via conventional means. PV can provide service to low-revenue loads where line extensions would be unfeasible.

Communications, warning signals, sectionalizing switches, cathodic protection, lighting, monitoring, and battery charging head up a growing list of appropriate applications for PV within utilities. Others include automated gas meters and gas-flow computers, gas samplers, and the like.

Participation across the U.S. by utility companies is still rather uneven. There are utilities that have determined that PV is their most reasonable option for many small loads—and there are utilities that have not yet made the decision to include photovoltaics among their options.

From a few watts to several kilowatts—the opportunities for utility incorporation of PV are wide open.



◁ BJ's Wholesalers in North Dartmouth, Massachusetts, serves as host to Sun Power Electric's first power plant. Following utility deregulation in Massachusetts, environmentally conscious electricity consumers' needs are being met through this 'green electric' product. There are actually three PV systems on BJ's. Two are wall mounted and one is roof mounted using special clips on a standing seam roof. The PV consists of 4 SunSine AC modules from Ascension Technology, 4 Evergreen Solar AC modules, and a 12kW ASE Americas system. *[Photo courtesy ASE Americas]*

▽ The City of Alameda (California) Bureau of Electricity commissioned this roof array on a parking structure at the Alameda Boat Harbor. The array consists of 78 Solarex 64W modules, gridded, using Trace Engineering's SW4048 UT inverter. The installation was performed by Pacific Solar Company, Redwood City, California, and partially funded by UPVG. *[Photo courtesy Pacific Solar]*





▽ This PV array field at Davis, California is operated by PVUSA, providing a ready test bed for utility applications. *[Photo courtesy PVUSA]*



▷ Here photovoltaics is used to operate a strobe light for Alabama Power. The installation was done by Hutton Communications. *[Photo courtesy Hutton]*



◁ Even though there is clearly conventional power available at this sectionalizing switch on Public Service Company of New Mexico's transmission line, the cost of transformers, surge arrestors, switches, and a rectifier to make the dc required for switch operation was greater than the cost of PV. The application requires only minimal annual energy, so this particular application is an ideal match for a small PV system. *[Photo courtesy Sandia National Laboratories]*



△ Remote telemetry for monitoring oil, gas and water pipelines is a common application for photovoltaics. Kyocera Solar, Inc. installed this monitoring system. *[Photo courtesy Kyocera Solar, Inc.]*



◁ PV powers this utility translator for Salish Kootenai Community College. The installation is on Pistol Creek Look Out, Idaho, and consists of 24 Solarex MSX 64W modules, delivering 1563kW output in peak sun. Storage is in 12 IBE industrial batteries; charge regulators are SCI PPC. *[Photo courtesy Kyocera Solar, Inc.]*

▽ A 100W Solar Electric Power assembly operates a digital computer monitoring system that measures a city's incoming water supply. PV performs reliably over the long term in monitoring the flow of water, gas, oil, and so on. *[Photo courtesy Solar Electric Power Company – SEPCO]*



△ Solarex provided this 7kW remote system for Southern California Edison at Big Creek, Mammoth Mountain. Shown is one of the arrays featuring 60 MSX-60 modules. *[Photo courtesy Solarex]*





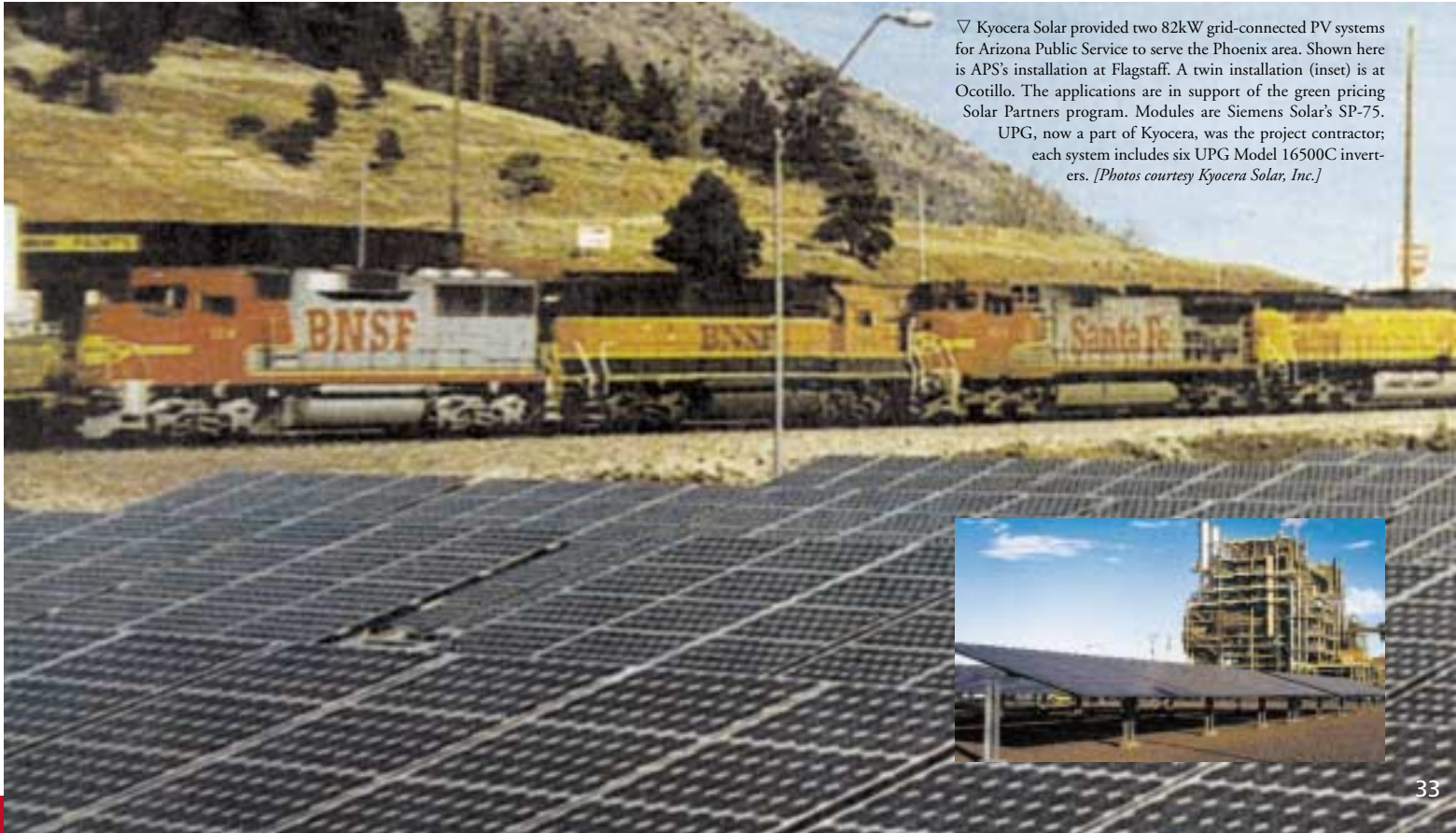
◁ This 129kW PV single axis tracking system for Sacramento Municipal Utility District is located at the city's municipal airport. In addition to providing utility power, it serves as a parking lot

shade structure. [Photo courtesy Kyocera Solar, Inc.]



◁ One of two 100kW single axis grid-connected PV tracking systems installed by Kyocera Solar for the Salt River Project, Phoenix, Arizona. The modules are Siemens SP75s. [Photo courtesy Kyocera Solar, Inc.]

▷ Cathodic protection of pipelines is one of the most appropriate and common uses for photovoltaics by utility companies, as it provides an economical and effective solution to corrosion problems. The solution is an electrical current from a PV source to counteract the natural corrosive currents generated around buried metallic devices. [Photo courtesy Kyocera Solar, Inc.]



▽ Kyocera Solar provided two 82kW grid-connected PV systems for Arizona Public Service to serve the Phoenix area. Shown here is APS's installation at Flagstaff. A twin installation (inset) is at Ocotillo. The applications are in support of the green pricing Solar Partners program. Modules are Siemens Solar's SP-75. UPG, now a part of Kyocera, was the project contractor; each system includes six UPG Model 16500C inverters. [Photos courtesy Kyocera Solar, Inc.]

